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ACHIEVING HIGHER LEVELS OF BUSINESS PROCESS IMPROVEMENT: A CASE STUDY

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Abstract

The research topic has significant implications on organisations that aspire to reach higher levels of improvement by continuously creating diverse values to their stakeholders and building unique Business Process Improvement (BPI) capabilities. We present an a-priori model derived from well-known theories and domains such as stakeholder and organisational capabilities theories. The model mainly posits that the degree of key stakeholder requirements alignment and the BPI organisational capabilities together impact the level of improvement achieved in BPI projects. These factors are in turn impacted by, for example, centrality, communication, culture. The model is tested using a case study in an Australian higher education institution, relying primarily on semi-structured interviews. The testing of the model has uncovered a number of interesting insights. For example, continuous top management support, which was posited to be an antecedent of BPI organisational capabilities, was found to be strongly related to key stakeholders requirements' alignment and risk management. As such, top management can play a more effective role in BPI initiatives in achieving higher levels of improvement. The case also found that better levels of: time to perform processes, accessibility, maintainability, accuracy, ease of use, consistency, quality, and end users' satisfaction could measure the levels of improvement.

Keywords: Alignment, Organisational Capabilities, Business Process Improvement, Business Process Management

1 INTRODUCTION

Around the mid-eighties, organisations in advanced countries shifted their focus from the management paradigm of the firm's own growth to that of creating diverse values for stakeholders (Nakamura 2000). This new paradigm was to ensure sustainable profit growth so long as organisations successfully and continuously created diverse values for their different stakeholders. The creation of diverse values for stakeholders is facilitated with process improvement projects within Business Process Management (BPM) initiatives. Such initiatives require the effective communication with key process stakeholders in order to determine innovative and relevant improvements. However, in the current business environment dominated by high competition, virtual enterprises and outsourcing, organisations need to recognise and deal with much larger pools of diverse stakeholders, imposing their own unique requirements on business processes. Achieving higher levels of BPI also requires specific organisational capabilities such as sound risk management capabilities and staff experienced in designing improved business processes.

This paper is mainly motivated by the continuous need of organisations to find ways to achieve higher levels of improvement and, therefore, to improve and sustain their operations in the face of fiercely competitive and now deteriorated markets. Recent studies have found that there is a lack of guidance for organisations in terms of carrying out BPM initiatives and identifying how to get the most out of process improvement projects (Indulska et al. 2006). Therefore, the aim of this paper is to provide guidance on the factors that boost the levels of improvement achieved in BPI projects, and to identify common measures of process improvement.

We proceed as follows. First, we discuss the theoretical underpinnings of our work. This discussion is followed by the research model and its propositions. The paper then turns to discussing the case study and the case study protocol. The double-coding process and analysis sections follow highlighting the main findings of the study. The paper concludes with a discussion of findings, implications and future work.

2 BACKGROUND THEORY

We draw on the domains of stakeholders, alignment, social network analysis and organisational capabilities as the bases for factors expected to influence levels of improvement achieved in BPI projects. These research domains were chosen as they provide a holistic understanding to the mainly socially oriented area under research.

Stakeholder theory is considered in our work because it focuses at the need to align stakeholders' requirements, an aspect that is also of interest in the alignment literature. To assist in the alignment process, social network analysis is considered to identify the key stakeholders, their relationships, the network boundaries, along with the positions of the participants in the network. Organisational capabilities theory is used to identify the critical elements that aid in achieving higher levels of improvement thus providing the organisation with competitive advantage over its competitors.

2.1. Stakeholder Theory

Stakeholder theory is considered by some to be a meta-theory (Freeman, 1997), and an amalgamation of the concepts of stakeholder, economic theory, behavioural science, and ethics (Jones, 1995; Clarkson, 1995). The theory provides a unified framework to identify the nature and relationships between different stakeholders, as well as substantial insight into multiple-stakeholder coordination (Hill & Jones, 1992; Freeman & Evan, 1990). This belief backs up the some of the lines of argument in this research. Stakeholder theory also posits that "management has a duty of safeguarding the welfare of the abstract entity that is the corporation and of balancing the conflicting claims of multiple stakeholders to achieve this goal" (Evan & Freeman,

1993, cf. Donaldson et al., 1995, p.79). Therefore, according to stakeholder theory, managers hold responsibilities beyond the discourse of the neoclassical theory of the firm (Mitchell et al., 1997). Neoclassical theories mainly aim for profit maximisation, excluding the interests of non-stockholding groups, and fail to analyse concurrently organisational behaviour from both the social and economic performance perspectives. Thus, it is this wider scope that provides significant insights on achieving higher levels of improvement in this research.

2.2. Alignment Literature

Alignment tightly relates and strongly enriches stakeholder theory. Alignment, according to Windsor (1999), is: "... that interests move in the same general direction" (Windsor, 1999, p.5). As such, we define alignment as 'orchestrating the different requirements of key stakeholders to move them into the same general direction'. Wallace (1995) believes that obtaining alignment has to be achieved "within the MIS (Management Information System) context of their (i.e. stakeholders) legitimate hierarchical relationship and the firm's basic need of profitability" (Wallace, 1995, p.90). Whereas more recently, Green and Jack (2004) focus on the creation of stakeholder value by consistently aligning the support environment with stakeholder needs. They argue that the measurement of quality and performance should be embedded in the used-measure movements and that value creation must be more diverse to reflect reporting of all stakeholder groups (Green & Jack, 2004). In the MIS literature, the importance of the alignment area is dominant and has been on the top of academic and practitioner agendas, referring predominantly to Business-IT alignment (Reich & Benbasat, 2000; Brancheau et al., 1996). In fact, Chan and Reich (2007) reported that alignment between business and IT is the number one management concern of all of their respondents for the years 2003, 2004, and 2005 (Luftman et al., 2005). Their findings supports strongly that the very core idea of alignment remains important and provides support to this research.

2.3. Organisational Capabilities Theory

Capabilities are accumulated knowledge in organisations resulting from using its existing resources in an efficient and effective manner so as to achieve its final goals (Idris et al., 2003). Spanos et al. (2004) specifically refer to capabilities as "the dynamic, nonfinite, firm specific, and path dependent processes that are not obtainable in the market place, are difficult to copy, and are accumulated through long term, continuous learning" (Spanos & Prastacos, 2004, p.31). Examples of capabilities include production flexibility with short production cycles, innovation ability, responsiveness to market trends, and outstanding reliable customer service (Amit & Schoemaker, 1993). Teece et al. (1997) and later Eisenhardt et al. (2000) found that repeated practice, mistakes, and crisis help develop dynamic organisational capabilities. This finding is in line with Coyne's (1986) categorisation of capabilities as: functional differential, positional differential, cultural differential, and regulatory differential (Coyne, 1986). According to Coyne (1986), capabilities develop from existing skills and experience (functional), as preferences of previous actions (positional), as a result of the perceptions of the individual organisational stakeholder group (cultural), or from organisational policies and regulations (regulatory) (Hall, 1991). In this research context, this means that following Coyne's (1986) and Eisenhardt et al.'s (2000) argument, an organisation that develops its own process improvement experience, with supporting regulations for change in place, and a supportive culture for BPI would hold a relatively high level of organisational capabilities for business process improvement. Accordingly, it would have a competitive advantage over its rivals. Organisations that successfully deal with continually changing markets by integrating, building, and reconfiguring internal and external competencies sustain their competitive advantage (Teece et al., 1997). Barney (1991) argues that the more the organisation can sustain its competitive advantage (SCA),

the more it will enjoy abnormal rents or above average returns (Schoemaker, 1990; Barney, 1991; Grant, 1991), or in this case the more the organisation accumulates its BPI ‘know-how’ own knowledge, such as human skills, the higher the levels of improvement. The following relies on the theories understanding to provide a research model with ten propositions.

3 RESEARCH MODEL AND PROPOSITIONS

Figure 1 shows the proposed *a-priori* model of factors that influence levels of improvement achieved in BPI projects. The model consists of preliminary factors from two major areas affecting the level of improvement, viz. ‘Degree of Key Stakeholders’ Requirement Alignment’ and ‘BPI Organisational Capabilities’. The model and its factors are explained in the following sections.

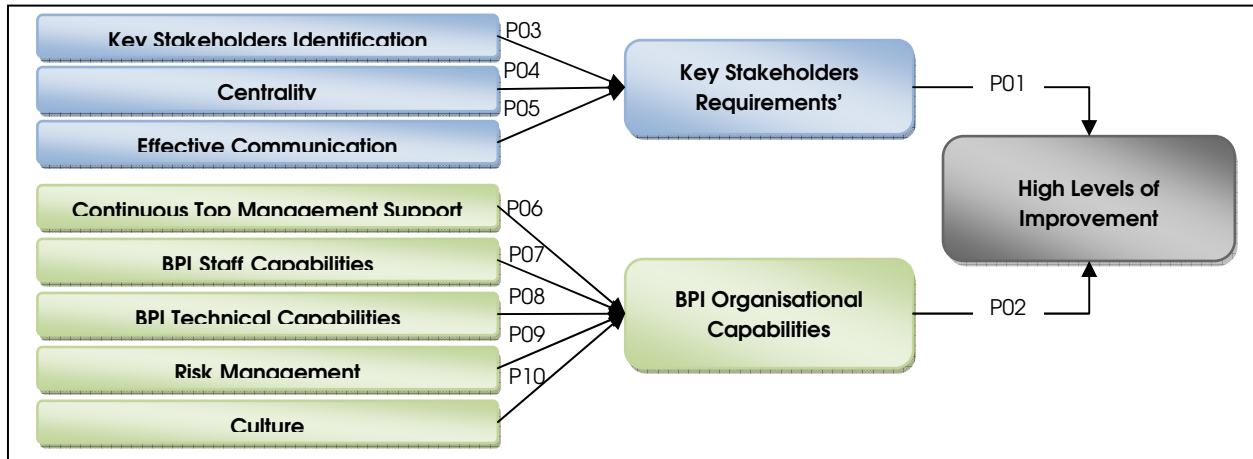


Figure 1. Higher Levels of Improvement Research Model

Achieving Higher Levels of Improvement

We relate the degree of key stakeholders requirements’ alignment factor to achieving higher levels of improvement. Stakeholder theory is capable of uncovering the relevant participants in the process, determining the variety of these individuals’ preferences, and attempts to satisfy as many of those preferences as possible (Burton & Dunn, 1996). As such, stakeholder theory proposes that a firm should resolve its problems by finding the optimal balance among all ‘important’ stakeholders, which results in an overall positive impact on its financial performance (Wicks et al., 1999; Barney & Hansen, 1994; Hill, 1995; Jones, 1995; Pfeffer, 1994). Coupled with the social alignment literature, we extend the positive impact and posit a strong relationship between alignment and achieving higher levels of BPI. This relationship is evident in Schiemann’s (2006) work who warns that misalignment causes the diminishing of people’s equity and leads to an increase in operational cost, inefficient use of resources, and lower productivity, that ultimately results in a negative impact on customer relations (Schiemann, 2006). Accordingly, we argue that:

P01: The higher the level of key stakeholders requirements’ alignment, the higher the perceived level of improvement achieved.

The level of improvement achieved in BPI projects is heavily dependent on the level of BPI-specific organisational capabilities accumulated by the organisation. Organisational capabilities theory explains that the capabilities of the organisation are limited, and, thus, organisations need to use their resources in a cost-effective way to create competitive advantage. Sustaining that competitive advantage, however, requires continual business process improvement by organisations to differentiate themselves from their competitors (McAdam & O’Hare, 1998; Attaran & Attaran, 2004). It is therefore posited that:

P02: Accumulating a BPI-specific set of organisational capabilities positively influences the level of business process improvement achieved.

Factors Driving Degree of Key Stakeholders' Requirement Alignment

It is practically impossible to meet everyone's requirements, and the larger the number of stakeholders involved in the project, the lesser the chances to align these requirements. Therefore, to enhance the degree of Key Stakeholders Requirements' Alignment, we need to identify who the 'Key Stakeholders are'. If wrongly selected, the BPI initiative will end up aligning the requirements of stakeholders who are not necessarily key, and perhaps leaving some important stakeholders out. Thus the focus in this study is on key stakeholder groups requirements, and not all stakeholders. Freeman (1984) provides the most used stakeholder definition in literature. For Freeman (1984) a stakeholder is "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984: 46). In our case 'key' stakeholders can be defined as 'any group or individual who can significantly affect or is significantly affected by the achievement of the organisation's objectives'. Nevertheless, Freeman's definition is criticised by Mitchell et al. (1997) for being broad. Mitchell et al. (1997) instead, introduce a typology that facilitates the systematic identification of stakeholders. They identify power, legitimacy, and urgency as three key attributes that assist in identifying stakeholders. Therefore, stakeholders that are powerful, legitimate, and with urgent needs would have higher priority than those with only one of the three attributes. As such we argue that:

P03: Better systematic key stakeholder identification in terms of Power, Legitimacy, and Urgency achieves higher degrees of Key Stakeholders Requirements' Alignment.

After clearly identifying the key stakeholders, the focus then moves to their relationships with each other and the BPI project manager. This overall environment is often referred to as the 'network structure' (Scott, 2000), and is a central interest in the Social Network Analysis (SNA) research area, which lies in the social and behavioural sciences domains. SNA enables mapping and measuring of relationships among the interacting units and provides both visual and mathematical analysis of human relationships. In social networks, centrality refers to the actor's location relative to others in the network. Central actors will have many ties reflecting their high level of involvement or activity in the network. Centrality also conveys a sense of status in the organisation and assists in resisting stakeholder pressures. Thus, it is argued that there is a need to identify the network boundaries that determine the actors' attributes, analyse their relations, and identify the central issue or event under investigation (Knoke, 1994, cited in Rowley, 1997, p.905). It is then believed that the project manager needs to establish relationships among the key stakeholders to improve their involvement and their awareness of the other key stakeholders' needs' thus making their requirements easier to align. Therefore, it is posited that:

P04: The more central the position of the key stakeholder in the network, the higher the degree of alignment of their requirements.

Once the key stakeholders and their relationships are identified, there is a crucial need to concentrate on their communication process. Communication is the fluid that runs within the key stakeholders' relationships disseminating their requirements inside the network. Roberts et al. (2000) focused on different stakeholders issues, stating that "the development process must facilitate communication, learning, and negotiation between the systems developers and various stakeholders" (2000, p.78). For instance, the lack of a common language between technical and non-technical personnel is a common communication problem (Coughlan et al., 2003). There is a need to build bridges to decrease the requirements communication gap and assist the alignment process in "thought and action" (Van Der Zee & De Jong, 1999). We thus use the term, 'Effective Communication', to refer to all the communication mechanisms needed (such as continuous reporting to, and attaining feedback from key stakeholders) to reach agreement among the various key stakeholders. As such, we argue that:

P05: The higher the level of effective communication, the higher the degree of key stakeholders requirements' alignment.

Factors Driving BPI Organisational Capabilities

Organisational capabilities are the ability to perform repeatedly a productive task which relates either directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs into outputs Grant (1996, p. 377). The first factor proposed to be affecting organisational capabilities is continuous top management support throughout the duration of the project. KPMG, through an international survey in 2003, found that CEOs and company boards are blamed for the increasing technology project failures (Jones, 2005). The survey projected figures from 600 companies from the financial, services, technology, consumer, utilities, and government industries. The average project failure was \$US14M in 2003. The study concluded that "executive officers increasingly seek control over the initial budgeting and approval of major technology projects, but fail to follow them to completion" (Jones, 2005, p.20). As such, it is not top management support but continuous top management support from start to finish that matters in IT projects. Similarly, we expect that such continuous support is required to obtain specific BPI organisational capabilities that will in turn achieve higher levels of improvement in BPI projects. Thus, we argue that:

P06: Continuous top management support is an essential ingredient in creating BPI organisational capabilities.

Moreover, BPI literature devotes some attention to organisational capabilities, such as staff and technical capabilities. Process improvement oriented staff capabilities, such as building on BPI experience, explain the ability of people to think along process lines and understand tasks involved in an organisational process improvement environment. Similarly, the technical BPI capability focuses on the need to establish of a set of BPI-related tools and techniques that assist in the technical execution and implementation of BPI initiatives. As such, obtaining specific staff and technical process improvement capabilities assists the firm in obtaining organisation-wide abilities to perform BPI tasks repeatedly, thus impacting the firms' capacity to create value. Therefore, we argue that:

P07: BPI staff capabilities positively affect the creation of overall BPI organisational capabilities.

P08: BPI technical capabilities positively affect the creation of overall BPI organisational capabilities.

Risk of project failure is a known factor in improvement projects in general because such projects deal with a large number of uncertainties. Improvement projects bring changes that can be opposed by many stakeholders. Hoffer et al. (2008) claim that BPI risks can be attributed to (1) the size of the project (team size, project duration, and programming efforts); (2) project structure (management commitment, users perceptions); (3) development group (familiarity with the new process, development method, and previous experience with similar improvement projects) and (4) user group (application area). Risk management is the act of identifying and mitigating threats to the business' outcomes. Risk mitigation strategies include acquiring strong project management skills, proactively dealing with risks, and increasing the level of communication. Accordingly, we expect that effectively managing risks should allow the organisational on focusing on the development of BPI Organisational Capabilities, as such:

P09: Risk management assists in attaining higher levels of BPI organisational capabilities.

Last, Chan et al. (2007) define organisational culture as "the shared values and norms of behaviour that allow the organisation's employees, at every level to work together successfully toward a common goal" (Chan & Reich, 2007, p.311). It is this common goal that different stakeholders' groups work towards that is of importance in this context. We argue that establishing an organisational culture that promotes, hosts, and assists improving business processes, shapes the level of BPI organisational capabilities.

P10: A BPI supportive culture increases the level of BPI organisational capabilities

4 EXPLORATORY CASE STUDY

The Project

The undertaken project was an improvement of the web environment of a school within an Australian tertiary institution. The web environment includes the website, its related databases, and a collaboration information system. The central aim of the project was to improve the site as a marketing and communication tool. As a result, the main affected business processes include marketing and sales. The school's objective was to improve its profitability by attracting more students to its offered programs both nationally and internationally. As a result, the newly introduced web environment and its related processes have changed the way end user groups perform their daily processes.

Case Study Process

A case study was conducted according to Yin's (2003) guidelines. The available data sources included semi-structured interviews, informal discussions with end-users, attendance at two project workshops by one of the researchers, access to a range of archival records, and the gathering of information from the university, school, and consultant websites. All sources were used and provided direct and indirect input to the overall understanding of the project and its outcomes. The case study was mainly exploratory in nature and was carried out with the aid of a case study protocol. The protocol incorporated three sections, covering the main research areas of alignment, organisational capabilities and the perceived level of improvement. Each section started with an open-ended question, followed by a series of closed-ended questions, and finished with a second open-ended question.

The case study was initiated by an email to the IT manager to identify the initial seed set of key players in the project. This task was done under the assumption that she would be the most suitable person to manage contacts about the project. The IT manager was requested to identify the key players of the project. The names were selected and given one vote each. These identified key players were also emailed and were asked to name the key players of the project. The process was repeated until it reached saturation. Names with the highest number of votes (i.e. referrals) were selected to be interviewed. The process resulted in a list of five people who played critical roles before, during and after the project. In addition, one of two web officers (a non-key stakeholder) was approached to participate in the research. Thus, the total number of participants became six with a non-key stakeholder involved. Including a non-key stakeholder in the case study provided potentially contrasting results from those derived from key stakeholders (see EDUC.02 in Figure 3). It was found that the non-key stakeholder had contributed the least in terms of number of references, and provided good reasoning to the selection of the participants.

Interviews were audio-recorded and conducted between October and November 2007 at times and locations selected by the study participants. Participants included five internal staff members and one external consultant. The internal staff members' roles included the project manager, two managers, one executive officer, and a web officer. Participants' expertise covered the IT/IS, web, marketing, management, and consulting areas. Three of the interviewees had experience in excess of ten improvement projects in the past. The differences in demographic characteristics in terms of areas, positions and experiences proved to be critical at the analysis stage where the participants provided a wide range of different perspectives of the project in general and the research model in particular.

5 CODING AND DATA ANALYSIS RESULTS

Interviews were transcribed and then followed a three-step coding process. The first step involved the researcher reading the six transcripts several times to establish a clear understanding of their content.

Main ideas were flagged via a manual coding process. The second and third stages were aided by NVivo 8. NVivo is a software tool that allows users to classify, sort and arrange pieces of information; examine complex relationships in the data; and combine subtle analysis with linking, shaping, searching and modelling. The two NVivo-aided steps were different in nature. The first targeted the identification of factors (answering ‘what’ questions) and the second focused on the identification of relationships (answering ‘how’ questions). The detailed factor and relationship coding procedures are explained below.

Factor Coding

The factor coding aimed at achieving four main objectives: (a) Coding for information related to the project (e.g. participants, time, budget, the need to change, and technologies to implement); (b) Coding to identify evidence of the existing research factors. For instance, when discussing the effective communication factor, it was found that three managers agreed on the need to dramatically improve the website environment. However, when the improvement process was initialised, it was found that each had a different understanding of what an improvement would entail. A participant commented: “just not realising that we weren’t talking the same language a few times”. This finding reflected the ineffective communication mechanism among key stakeholders; (c) Coding to identify new factors. The exploratory approach of the case study, aided by open-ended questions, assisted in allowing participants to provide insights about any potential factors that might have been missed at the literature review stage. Some potential new factors emerged as a result of this task. Two examples are “Requirements Identification” as a factor affecting Alignment and “Resources” affecting BPI Organisational Capabilities. These new factors will be evaluated against the literature for potential inclusion in a revised version of the research model; and (d) Coding to identify measures of research factors. The aim was to capture as many measures for each factor as possible. The measures were to be used in future confirmatory quantitative studies. The number of measures gathered for each factor was large. For example, when a participant was asked a culture-related question, she commented: “I guess we had the skill, the attitude, and the buy-in right from the beginning”. Thus, the response inferred that the attributes of skill, attitude, and project buy-in are potential surrogates of the factor of Culture.

Relationship Coding

The second round of coding targeted the relationships of the model. This process involved coding aimed at identifying statements that link or refer to two or more factors concurrently. Again, using NVivo, we created ten nodes representing the ten relationships (named as R1, R2 ... R10, see Figure 3). The six transcripts were read again and references were collected and organised under the predefined relationship nodes. The completeness of the list of references was then enhanced with NVivo’s query functionalities. All instances were recorded and used to enhance the relationships table of references. Evidence for new relationships among the factors was also gathered. New relationships are depicted in Figure 3 starting with a ‘+’ sign. All the model’s existing and new relationships are shown in Figure 2. The identified values on the arrows in Figure 2 were based on the number of references found for each relationship. The figures provided the links’ strengths (i.e., the importance) of each relationship. The model shows the original relationships as straight arrows, and newly identified relationships as dashed arrows.

6 FINDINGS

The findings are based on the number of supporting references identified in the interview transcripts. These references were highlighted in NVivo and added to their relevant nodes. The process showed that some relationships seemed to be more evident than others (based on their high/low numbers). For instance, the relationship Effective Communication on Alignment (R5) with strength of “28” was the most discussed across participants. One of the participants said: “There was quite a bit of annexed amongst different groups about people. There was lot of people jumping up and down from what I could

say saying I want this and getting upset because their voices weren't heard". The next most frequently evidenced set of relationships were those of Alignment on BPI Improvement (R1) with strength of "23", Staff BPI Capabilities on BPI organisational Capabilities (R7) and Technical BPI capabilities on BPI Organisational Capabilities (R8) with strengths of "24" and "16" respectively. For instance, one of the comments reflecting the impact of alignment on the level of improvement says: "we all agreed in theory that the website needed to be improved, we turned out to have extraordinary different ideas of what that meant which hindered the results". Second, participants mentioned more the 'Social' capabilities (R7= "24") than the 'Technical' capabilities (R8= "16"), which is in accordance with the literature. Third, the relationship Centrality on Alignment (R4) was weak with reference strength of "3" only. This aspect could be due either to the minimal influence of the centrality factor on alignment, or to problems with the coding of centrality. Regardless of the reason, the factor itself appears to be of significantly lesser influence than the remaining factors.

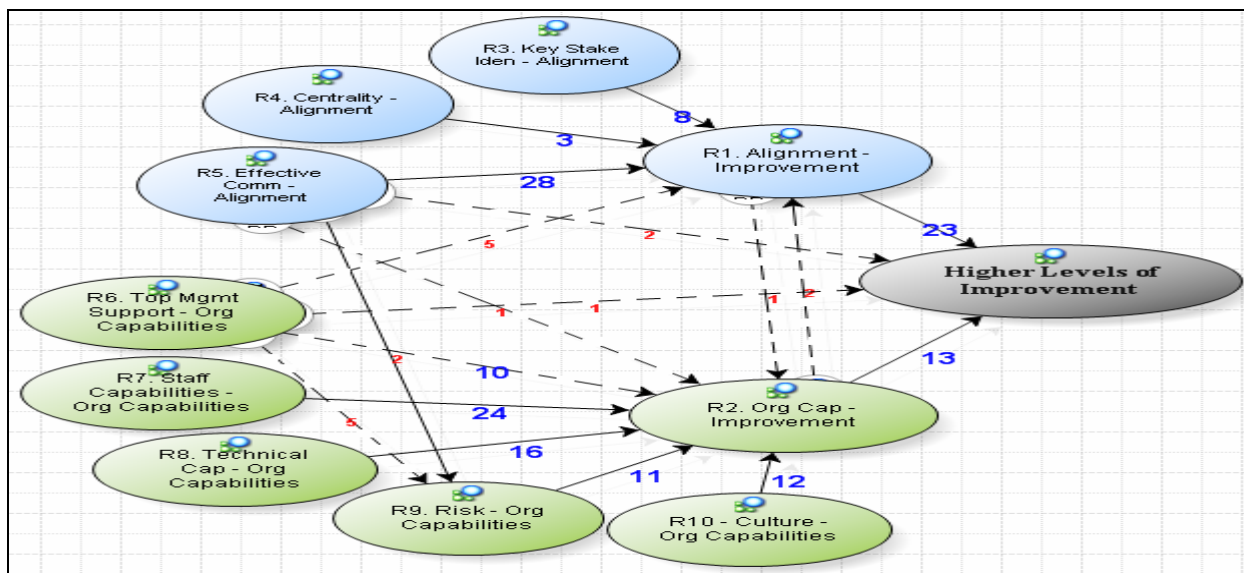


Figure 2: Relationship Strengths

The newly discovered relationships (dotted arrows) are also interesting. Of particular importance are the two relationships with strength of "5". Strength of "5" for new relationships is significant because the protocol questions were not intending to discover them. The two new relationships were Continuous Top Management Support on Alignment and Risk Management. The relationships meant that funding the initiative and signing off its forms was not the sole type of support it was needed from top managers. It was found that having an executive on the project team contributed positively to the achievement of alignment of the different requirements of key stakeholders. As one of the participants put it: "It was not working because we were... not conflict, but you know... at odds, we were at odds in the way that we were talking about things and how we could communicate, so [Executive] then stepped in and said would lead the project with us all talking to her". With regard to risk management, the case was similar. The continuous support and involvement of an executive had direct positive impact on how risk was dealt with. For example, a participant said: "Whenever [Executive] was approached or understood, that a certain risk was rising she would work with senior management of the school or of the university to try and mitigate risk". Another participant said: "I think risk was mitigated by regular engagement, by having done the workshops upfront, good preparation and regular communication flow and if we can't do it this way .. getting senior stakeholder input into it to move it on". Therefore, top management support was found to be linked to risk management. In addition, all participants mentioned a variety of measures that could be used to measure the investigated factors. For instance, the factor 'Higher Levels of Improvement' was found to be measured by having better process structure, and better levels of: distribution of tasks, time to perform processes, accuracy, consistency, quality, and users' satisfaction.

Furthermore, to visualise who said what and check the distribution of references among the participants, we relied on NVivo's matrices. Figure 3 shows the relationships as rows of the matrix, and the participants represented in columns. The matrix discloses a number of insights. First, almost all factors were refereed to by the participants'. This finding excludes EDUC.02 (the non-key stakeholder). Hence, the resulting distribution provides strong support for the appropriateness of the selected participants and contributes to the credibility of the findings.

	EDUC.01 ▼	EDUC.02 ▼	EDUC.03 ▼	EDUC.04 ▼	EDUC.05 ▼	EDUC.06 ▼
R1. Alignment - Improvement ▼	2	5	4	1	3	8
R2. Org Cap - Improvement ▼	4	1	3	0	4	1
R3. Key Stake Iden - Alignment ▼	2	2	3	1	2	2
R4. Centrality - Alignment ▼	1	0	1	0	0	1
R5. Effective Comm - Alignment ▼	4	5	2	5	3	9
R6. Top Mgmt Support - Org Capabilities ▼	3	0	1	1	1	4
R7. Staff Capabilities - Org Capabilities ▼	4	1	6	4	4	5
R8. Technical Cap - Org Capabilities ▼	5	1	1	4	2	3
R9. Risk - Org Capabilities ▼	2	1	1	2	3	2
R10 - Culture - Org Capabilities ▼	1	1	4	3	1	2
+ Top Mgmt ~ Perceived Improvement ▼	0	0	0	0	0	1
+ BPI ORG CAP - ALIGNMENT ▼	1	0	0	0	0	1
+ Top Mgmt Involvement ~ ALIGNMENT ▼	0	0	1	2	1	1
+ Communication - Perceived Improvement ▼	2	0	0	0	0	0
+ ALIGNMENT ~ BPI ORG CAP ▼	0	0	1	0	0	0
+ Communication ~ BPI ORG CAP ▼	0	1	0	0	0	0
+ Effective Communication ~ RISK ▼	0	0	0	1	1	0
+ Top Management ~ RISK ▼	0	0	0	1	3	1

Figure 3. Matrix Coding Query- Identified relationships

Second, it is also possible to derive from the participants' contribution what experiences and areas of expertise they had. For instance, EDUC.01 talks mainly about the organisational capabilities in general and about the technical capabilities in particular. EDUC.01 is the IT manager. EDUC.02 on the other hand as mentioned earlier was the web officer, a non key stakeholder who was approached to participate. As such it is clearly noticed that EDUC.02 had the least level of participation in terms of responses. In comparison EDUC.03, EDUC.05 and EDUC.06 had a more balanced position having a holistic understanding about the project and the discussed factors. These participants were the project manager, the executive officer, and the marketing manager respectively. This final checking process does not only further support the relevance of the relationships-coding process, but it also provides evidence of the effectiveness of the used protocol, and the approach used to conduct and analyse the pilot case study.

7 CONCLUSIONAND IMPLICATIONS

This paper presents a theory-based *a priori* research model for Business Process Improvement (BPI) initiatives. The model is based on well-known theories such as stakeholder theory and organisational capabilities theory. To test the model we conducted an exploratory case study in the education sector in Australia. The case study provided a number of rich insights. In particular, insight into the need to align the different requirements of key stakeholders, and the need to attain specific organisational capabilities to achieve higher levels of improvement.

Moreover, the case study provided an indication of the importance of the relationships between independent and dependent variables, as well helped to identify new factors and relationships. In particular, the role of continuous support of top managers on the alignment of key stakeholders requirements, and the need to focus at the staff's capabilities in relation to executing BPI projects. The findings also contributed in the gathering of potential measures to all factors. Of particular importance are the measures of process improvement (e.g. accuracy, consistency, and end users' satisfaction). These measures can be used to assess the levels of improvement in BPI projects.

Nevertheless, this study has a number of limitations. First, the project involved the improvement processes of the overall web environment. Although, the improvement project *per se* is not about a single business process, the web environment had a direct impact on a number of critical business processes, such as sales and marketing. Second, the interviews were coded by a single researcher. While this affects the reliability of the results, the process was enhanced with multiple iterations of analysis and aided with the use of built-in functionalities within NVivo. Last, the lack of generalisability due to a single case study. We mitigate this limitation by the fact that this case study focuses on a process improvement common across many organisations – the improvement of marketing and communication processes with internal and external customers. Future research will include the conduct of more case studies in organisations from other industries. This will be followed by a cross-case analysis and the final findings tested via a national survey.

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